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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/671,423 | 09/24/2003 | George Connors | 1870-332 | 5807 |
| 757 | 7590 | 07/14/2005 | EXAMINER | |
| BRINKS HOFER GILSON & LIONE P.O. BOX 10395 CHICAGO, IL 60610 | | | LIN, ING HOUR | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1725 | |

DATE MAILED: 07/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/671,423

Applicant(s)

CONNORS ET AL.

Examiner

Ing-Hour Lin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2005 and 28 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 43-78 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 43-78 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 43-49, 52-62, and 65-78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greskovich view of Banerjee et al and further in view of Montoya.

Greskovich (col.2, lines 48+) teaches the claimed slurry composition for a mold including alumina and colloidal silica and investment casting method (col. 3, lines 33+). Greskovich fails to teach the use of silicon carbide, setting agent and polysaccharide gum or welan gum for the slurry composition.

However, Banerjee et al (col. 2, lines 39+) teach the use of silicon carbide of the claimed particle size between 30 micrometer and 1.5 millimeters and weight percent or between 5-25

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wt%, larger particle size of alumina of brown fused component between 100 micron and 3 millimeter, free carbon in the form of graphite of 5 wt.%, and setting agent such as 0.2 wt.% magnesia for the slurry composition for the purpose of effectively making steel-containment equipment including a investment mold having reduced drying time and reduced cracking for casting of superalloys. It would have been obvious to one having ordinary skill in the art to provide Greskovich the use of silicon carbide, larger particle size of aluminum component, free carbon, and setting agent for the slurry composition as taught by Banerjee et al in order to effectively making investment mold having reduced drying time and reduced cracking for casting of superalloys.

Greskovich view of Banerjee et al fails to teach the use of polysaccharide gum or welan gum in brand name. However, Montoya (col. 7, lines 17+) teaches the use of polysaccharide gum or welan gum (see TABLE I) and polypropylene fiber in the slurry composition for the purpose of effectively improving adhesion, plasticity and controlling setting time and obtaining a single coat in coating various external surfaces including making investment mold by eliminating the need for a scratch coat followed by a brown coat. It would have been obvious to one having ordinary skill in the art to provide Greskovich view of Banerjee et al the use of polysaccharide gum or welan gum and polypropylene fiber as taught by Montoya in order to effectively improve adhesion, plasticity and controlling setting time and obtaining a single coat in making investment mold.

4. Claims 50 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greskovich view of Banerjee et al and further in view of Montoya and Schramm.

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Greskovich view of Banerjee et al and further in view of Montoya fails to teach the use of free carbon in the form of pitch or petroleum pitch. However, Schramm (col. 2, lines 39+) teaches the use of free carbon in the form of pitch or petroleum pitch for the purpose of substituting graphite and effectively reducing cost in making investment mold. It would have been obvious to one having ordinary skill in the art to provide Greskovich view of Banerjee et al and further in view of Montoya the use of free carbon in the form of pitch or petroleum pitch as taught by Schramm in order to substitute graphite and effectively reducing cost in making investment mold.

5. Claims 51 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greskovich view of Banerjee et al and further in view of Montoya and Doles.

Greskovich view of Banerjee et al and further in view of Montoya fails to teach the use of fumed silica and coating including spraying and brushing methods. However, Doles (col. 4, lines 60+) teaches the use of fumed silica (col. 8, lines 11+) for the purpose of making stronger coating in producing an investment mold. It would have been obvious to one having ordinary skill in the art to provide Greskovich view of Banerjee et al and further in view of Montoya the use of fumed silica as taught by Doles in order to make stronger coating in producing an investment mold.

Response to Arguments

Applicant's arguments filed on 4/4/05 have been fully considered but they are not persuasive. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, applicant argued that Greskovich directed to a method for making investment casting molds for casting of superalloys and Greskovich view of Banerjee et al fails to teach the use of polysaccharide gum or welan gum in brand name. However, Montoya (col. 7, lines 17+) teaches the use of polysaccharide gum or welan gum (see TABLE I) and polypropylene fiber in the slurry composition for the purpose of effectively improving adhesion, plasticity and controlling setting time and obtaining a single coat in coating various external surfaces including making investment mold by eliminating the need for a scratch coat followed by a brown coat. Therefore, it would have been obvious to one having ordinary skill in the art to provide Greskovich view of Banerjee et al the use of polysaccharide gum or welan gum and polypropylene fiber as taught by Montoya in order to effectively improve adhesion, plasticity and controlling setting time and obtaining a single coat in making investment mold.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ing-Hour Lin whose telephone number is (571) 272-1180. The examiner can normally be reached on M-F (8:00-5:30) Second Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

I. H. Lin

I.-H. Lin

7-8-05

KEVIN KERNS *Kevin Kerns 7/11/05*
PRIMARY EXAMINER